FEBRUARY 1985 VOL. X No. 2

ENDANGERED SPECIES

Technical Bulletin

Department of Interior. U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

Listings Made Final for Two Mammals

Two mammals were listed as Endangered during January 1985. The Fresno kangaroo rat survives only in a small area of native grasslands in California's San Joaquin Valley, and the cochito (or Gulf of California harbor porpoise) apparently has not even been seen in at least 4 years. Both mammals are now recognized by the Service as being in danger of extinction.

Fresno kangaroo rat

The main problem facing the Fresno kangaroo rat *(Dipodomys nitratoides exilis)* is habitat alteration and destruction. This hopping mammal, the smallest of California's kangaroo rats, has very restrictive habitat requirements. It must have a land surface with hummocks as sites for its extensive, but shallow burrow systems, and a substrate of suitable compactness to permit burrow construction. A relatively dense growth of vegetation is needed for escape from predators and for a source of food. Unlike some rodents, the Fresno kangaroo rat is not known to use areas that have been cultivated or irrigated. Historically, the animal's range probably included about 250,000 acres of the San Joaquin Valley.

By 1938, extensive conversion of native grasslands for agricultural development had reduced suitable habitat to about 100,000 acres. From 1938 to April 1981, approximately 90 percent of those 100,000 acres were lost to agricultural uses. Next, just in the period from April to November of 1981, 34 percent of the small amount of remaining habitat was eliminated. Loss of additional areas could happen at any time, and most of the native grasslands that do still exist are being damaged by livestock grazing. Grazing can adversely modify the habitat by reducing escape cover and reducing the food plant supply. Livestock can also directly damage the shallow burrows.

As much as about 6,417 acres of potentially suitable habitat still remain, but most has badly deteriorated because of heavy grazing, and may be converted to cropland unless something is done. Field studies conducted in 1981–1982 found only about 857 acres, mostly State-owned, actually occupied by the Fresno kangaroo rat.

The Fresno kangaroo rat was proposed for listing as Endangered on November 21, 1983 (see BULLETIN Vol. VIII No. 12), and the listing became final on January 30, 1985. About 857 acres in western Fresno County were designated as Critical Habitat (see final listing rule for map). Of this land, approximately 565 acres comprise the State of California's Alkali Sink Ecological Reserve (or lands scheduled for addition to the reserve), about 20 acres are part of the State-owned Mendota Wildlife Management Area, and the remainder is privately owned. Private landowners were notified of the proposed rule but did not submit comments.

The State of California supported the listing, but recommended that about 4,800 more acres that could support the kangaroo rat be added to the designated Critical Habitat. Rather than delay the Endangered listing by carrying out an expanded economic analysis on designating these additional lands as Critical Habitat, the Service decided to proceed with the 857 acres in the proposed rule. A new public comment period will be announced on the State's proposal, and a decision subsequently will be made on whether or not to designate the full 4,800 acres.

Photo by Walt Hoffman

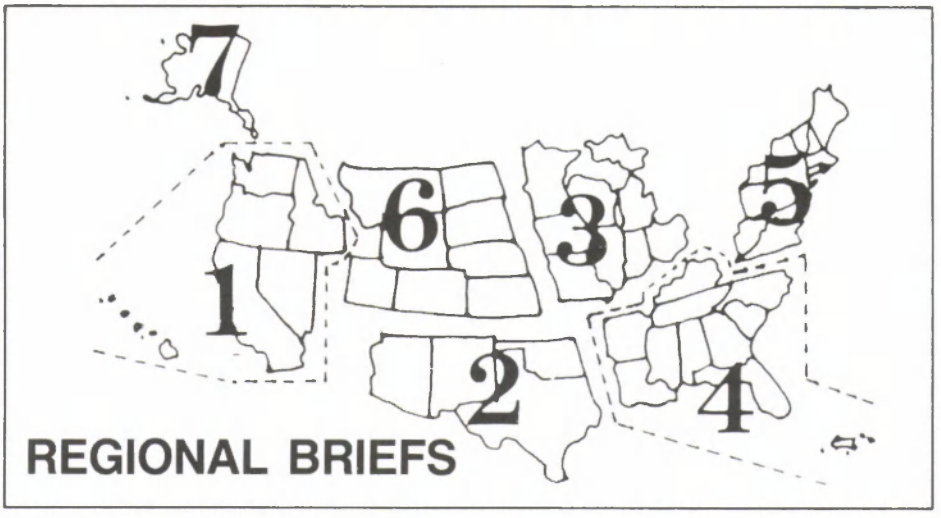
Fresno kangaroo rat

Available Conservation Measures

Under Section 7 of the Endangered Species Act, Federal agencies are required to ensure that any actions they fund, authorize, or carry out will not jeopardize the survival of the Fresno kangaroo rat or adversely modify its Critical Habitat. A preliminary analysis revealed no current Federal actions that would be affected by this provision.

Among the other conservation measures authorized by the Act are prohibitions against take and interstate or international trafficking in the species without a permit, the requirement for the Service to develop a recovery plan, and the possibility of Federal funding for cooperative State endangered species programs.

continued on page 3



Endangered Species Program regional staffers have reported the following activities for the month of January:

Region 2—A joint meeting of the Fish and Wildlife Service's (FWS) Region 2 plant recovery teams was held in Albuquerque, New Mexico, on January 10–11, 1985. Participants included representatives from the New Mexico, Arizona, Texas, and Oklahoma plant recovery teams, the regional botanical staff, and the FWS Washington Office, as well as guest speakers from various universities. The objectives of the meeting were to acquire information on listing candidate assessments, recovery plans, and recovery task priorities. Information on recovery guidelines, the FWS Division of Realty and its role in recovery, the biology of recovery, and CITES' relationship to the Endangered Species Act and to the recovery process was also provided. Washington Office representatives were given an opportunity to see how the region's recovery teams worked and botanists were able to compare notes. The Region 2 botanical staff anticipates having a similar meeting approximately every 2 years.

* * *

Dr. Jim Lewis, the FWS Whooping Crane Coordinator, visited the San Antonio Zoological Park recently to arrange the transfer of a pair of whooping cranes *(Grus americana)* to the FWS Patuxent Wildlife Research Center in Laurel, Maryland, to supplement the captive-breeding population there. It is hoped that this will allow the Patuxent staff to maximize the potential for this pair's egg production, as they have not produced young during their 5-year stay in San Antonio.

A whooping crane being cared for at the Rio Grande Zoological Park in Albuquerque, New Mexico, died on January 21 after undergoing surgery to repair a broken leg. Although the bird was not eating on its own initiative, it had gained weight and was recovering from avian cholera at the time. A subsequent autopsy found its liver to be badly damaged by the cholera bacteria and its kidneys enlarged.

A young whooping crane was sighted near Midfield, Texas, in late December and is being closely observed by the Texas Parks and Wildlife Department and the FWS to ensure the bird's safety. Presumably, this bird was separated from its parents during the fall migration, and it is currently staying with a group of sandhill cranes *(Grus canadensis)*.

* * *

As part of a cooperative study being conducted by the George Miksch Sutton Avian Research Center, the States of Oklahoma and Florida, and the FWS, 18 bald eagle *(Haliaeetus leucocephalus)* eggs were removed from wild nests in Florida and incubated in Bartlesville, Oklahoma. The hatch rate has been excellent, with 17 chicks hatched. Tentative plans are to foster these chicks into wild nests or hack them into the wild. Possible sites include areas in the States of Alabama and Georgia, and the Sequoyah National Wildlife Refuge (NWR) in Oklahoma. Currently, a bald eagle pair is building a natural nest in Sequoyah NWR—one of the three wild nests in that State.

* * *

continued on page 11

U.S. Fish and Wildlife Service
Washington, D.C. 20240

Robert A. Jantzen, *Director*
(202-343-4717)
Robert E. Gilmore
Associate Director and
Endangered Species Program Manager
(202-343-4646)
John L. Spinks, *Chief,*
Office of Endangered Species
(703-235-2771)
Thomas J. Parisot, Chief,
Federal Wildlife Permit Office
(703-235-1937)
Clark R. Bavin, *Chief,*
Division of Law Enforcement
(202-343-9242)
TECHNICAL BULLETIN STAFF
Michael Bender, *Editor*
Denise Henne, *Assistant Editor*
(703-235-2407)

Regional Offices

Region 1, Suite 1692, Lloyd 500 Bldg., 500 N.E. Multnomah St. Portland, OR 97232 (503-231-6118): Richard J. Myshak, *Regional Director*; William F. Shake, *Assistant Regional Director*, Wayne S. White, *Endangered Species Specialist.*

Region 2, P.O. Box 1306, Albuquerque, NM 87103 (505-766-2321); Michael J. Spear, *Regional Director*; Conrad A. Fjetland, *Assistant Regional Director*, James Johnson, *Endangered Species Specialist.*

Region 3, Federal Bldg., Fort Snelling, Twin Cities, MN 55111 (612-725-3500): Harvey Nelson, *Regional Director*; John S. Popowski, *Assistant Regional Director*; James M. Engel, *Endangered Species Specialist.*

Region 4, Richard B. Russell Federal Bldg., 75 Spring St., S.W., Atlanta, GA 30303 (404-221-3583): James W. Pulliam, *Regional Director*; John I. Christian, *Assistant Regional Director*; Alex B. Montgomery, *Endangered Species Specialist.*

Region 5, Suite 700, One Gateway Center, Newton Corner, MA 02158 (617-965-5100): Howard Larsen, *Regional Director*; Stephen W. Parry, *Assistant Regional Director;* Paul Nickerson, *Endangered Species Specialist.*

Region 6, P.O. Box 25486, Denver Federal Center, Denver, CO 80225 (303-234-2209): Galen Buterbaugh, *Regional Director*; John D. Green, *Assistant Regional Director*; Barry S. Mulder, *Endangered Species Specialist.*

Region 7, 1101 E. Tudor Rd., Anchorage, AK 99503 (907-786-3542): Robert E. Putz, *Regional Director*; Jon Nelson, *Assistant Regional Director*: Dennis Money, *Endangered Species Specialist.*

U.S. Fish and Wildlife Service Regions

Region 1: California, Hawaii, Idaho, Nevada, Oregon, Washington, and Pacific Trust Territories. **Region 2:** Arizona, New Mexico, Oklahoma, and Texas. **Region 3:** Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Ohio, and Wisconsin. **Region 4:** Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Puerto Rico, and the Virgin Islands. **Region 5:** Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia, and West Virginia. **Region 6:** Colorado, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. **Region 7:** Alaska.

The ENDANGERED SPECIES TECHNICAL BULLETIN is published monthly by the U.S. Fish and Wildlife Service. Department of the Interior, Washington, D.C. 20240.

Listings Made Final for Two Mammals

continued from page 1

Cochito

The cochito, or Gulf of California habor porpoise *(Phocoena sinus)*, was listed as Endangered on January 9, 1985. The marine mammal, which is similar in appearance to the common harbor porpoise *(Phocoena phocoena)*, is known only from the northern third or quarter of the gulf. For more than 40 years, the cochito population has been seriously affected by incidental take during commercial gillnet fishing throughout its restricted range. Today, it is on the brink of extinction (if it even exists). No confirmed sightings of this animal at sea have been reported since 1980.

The determination that the cochito is Endangered was made by the National Marine Fisheries Service (U.S. Department of Commerce), which has Endangered Species Act responsibilities for most marine animals. For further information, contact the Protected Species Division, Office of Protected Species and Habitat Conservation, National Marine Fisheries Service, 3300 Whitehaven Street, NW., Washington, D.C. 20235.

Photo by Christine A. Flanagan

The cochito, or Gulf of California harbor porpoise, is jeopardized by incidental take during gillnet fishing operations.

Utah Plant, the Jones Cycladenia, Proposed for Listing

One of southeast Utah's rare endemic plants, Jones cycladenia *(Cycladenia humilis* var. *jonesii)*, has been proposed by the Service for listing as Endangered (F.R. 1/10/85). Approximately 5,000 to 6,000 individuals are known from three populations of the plant in Emery, Garfield, and Grand Counties. The primary threat to its survival is habitat damage caused by off-road vehicles (ORVs) used for recreation and for oil, gas, and mineral exploration.

A herbaceous perennial growing 10–15 centimeters tall, Jones cycladenia bears clumps of broad, bright green leaves and rosy flowers that, according to Alice Eastwood, who described the plant, "somewhat resemble small morning-glories and have a charm that thrills the beholder." The Jones cycladenia is the only member of its genus in the Intermountain West. It occurs in the arid Canyonlands region of Utah, which is considered relatively ancient floristically and which has more endemic plants than any other part of the State (approximately 70 taxa). In addition to the *Cycladenia*, about 13 of these taxa are candidates for possible listing as Endangered or Threatened. The region's arid climate and harsh soils make its ecosystems fragile, easily degraded by surface disturbances, and slow to recover.

The largest population of Jones cycladenia occurs at two sites totalling approximately 40 acres in the San Rafael Swell. Some 2,000 of the plants grow on public property administered by the Bureau of Land Management (BLM). A smaller population segment, only 2 miles away, numbers about 500 plants on State land. Both parts of the San Rafael Swell population are subject to damage from oil, gas, and mineral exploration activites, and the habitat is already scarred by the tracks of bulldozers, trucks, and motorcycles. Mining claims have been staked throughout the area, and the annual assessment work required to maintain rights to these claims, along with other exploration, are causes of continual disturbance of the habitat.

A 1983 field survey located a new population of Jones cycladenia, which consists of about 3,000 individuals over approximately 2 miles in the Purple Hills area of Garfield County. This population occurs on parts of Glen Canyon National Recreation Area (GCNRA), Capitol Reef National Park, and Bureau of Land Management (BLM) lands. The GCNRA and BLM lands currently are managed for multiple use. Leases issued and pending adjacent to the Purple Hills population indicate interest in tar sands development. There are also oil and gas leases and mining claims in the Purple Hills region.

A third very small population (only 12 to 20 plants) of Jones cycladenia occurs on BLM land in Professor Valley (Onion Creek), northeast of Moab. Heavy use of motorcycles in this area has worn denuded strips through the small population. There is also a single large plant in adjacent Castle Valley that was discovered in 1968. No other plants have been found in Castle Valley despite many searches. Possibly another population could still occur in southern Utah or northern Arizona, but it is known only from an indefinite 1882 collection and has not been seen since that time.

Potential Conservation Actions

If the proposal to list Jones cycladenia as Endangered becomes final, this plant could benefit from the conservation measures authorized by the Endangered Species Act. Under Section 7 of the Act, Federal agencies are required to ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the survival of Endangered plants. Although potential threats from vandalism and collecting have precluded proposing a formal designation of Critical Habitat for Jones cycladenia, the habitat conservation provisions of Section 7 would still apply.

continued on page 12

NMFS Proposes Additional Protection for Two Species of Seals

Proposed rules to provide additional protection for two seal species were recently published by the National Marine Fisheries Service (NMFS), Department of Commerce, which has Endangered Species Act jurisdiction over most marine animals.

Guadalupe fur seal

On January 3, 1985, NMFS proposed listing the Guadalupe fur seal *(Arctocephalus townsendi)* under the Endangered Species Act of 1973 as a Threatened species. This small to medium sized (50–160 kilograms) seal once may have ranged from the Revillagigedo Islands (which are about 300 miles south of Baja California, Mexico) to Monterey Bay, California. NMFS estimates that the historical population included at least 30,000 seals. During the early to mid-19th century, commercial fur sealers of various nationalities hunted this animal to its presumed extinction.

The discovery years later of a few seals at Guadalupe Island, Mexico, rekindled hope for the species' eventual recovery. Recent surveys indicate that the total population now consists of about 1,600 animals at Guadalupe Island and is still growing. One reason they remain vulnerable is that the species currently is known to breed only along the eastern shore of Guadalupe Island. Prior to its overexploitation, the Guadalupe fur seal likely bred from the California Channel Islands south to at least Guadalupe Island, and perhaps even to the southern limit of its range.

A very small number of non-breeding seals are sporadically sighted off southern California. There is a possibility that the offshore oil development activities that are intensifying in southern California waters could affect individual seals in their pelagic habitat or on haulout areas at San Miguel and San Nicolas Islands. Fur seals rely on their thick pelage for insulation from the cold water, and contact with oil can damage its insulating qualities. Another potential impact could result from the U.S. Air Force's Space Shuttle Program; launches from California will probably cause high intensity sonic booms over the nothern Channel Islands. These noises could cause short-term disturbance to any seals present, although the potential effects on seals are unknown.

The Guadalupe fur seal was included on the original (1967) Federal list of animals considered "threatened with extinction," but was omitted from a 1970 revision and subsequent lists without explanation. It already receives protection from take under the Marine Mammal Protection Act, and it is listed on Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora. Listing the Guadalupe fur seal pursuant to the Endangered Species Act of 1973 would complement the existing protection through the Act's interagency consultation process (Section 7).

Since most of the current areas that meet the Act's definition of Critical Habitat are outside of U.S. territory, such a

continued on next page

Guadalupe fur seal

Photo by David B. Mars hall

Hawaiian monk seal with pup in waters off Laysan Island. Such shallow inner-reef waters are critical to weaned pups learning to feed; mature seals also feed there, as well as in deeper waters around the islands.

designation has not been proposed for the Guadalupe fur seal. If the breeding habitat is degraded, the seals expand their breeding range into the Channel Islands, or important foraging habitat is identified in U.S. waters, a Critical Habitat proposal may be considered. In the meantime, if the seal is listed under the Endangered Species Act, it will receive Section 7 protection anyway by virtue of its listed status. Federal agencies will be required to ensure that any actions they fund, authorize, or carry out in areas under U.S. jurisdiction are not likely to jeopardize the species' survival. In addition, all of the Act's take and trafficking controls will apply.

Critical Habitat for Hawaiian monk seal

NMFS also has proposed (F.R. 1/9/85) to designate Critical Habitat for the Endangered Hawaiian monk seal *(Monachus schauinslandi)*. A Critical Habitat designation should help in this case to prevent adverse modifications to the delicate and important coastal ecosystem of the Northwestern Hawaiian Islands. If made final, the designation will implement an important recommendation of the Hawaiian Monk Seal Recovery Plan (see feature in BULLETIN Vol. IX No. 4).

After a lengthy review, NMFS decided to propose Critical Habitat for all beaches, lagoon waters, and ocean waters out to a depth of 10 fathoms around Kure Atoll, the Midway Islands (except for Sand Island), Pearl and Hermes Reef, Lisianski Island, Laysan Island, French Frigate Shoals, Gardner Pinnacles, Necker Island, and Nihoa Island. This designation would incorporate essential breeding, pupping, and hauling-out areas; nearshore waters used by females and pups during nursing and post-weaning periods; and a portion of the foraging habitat used during the breeding season.

Although there are no inherent restrictions on human uses of an area that is designated as Critical Habitat, this designation generally overlays the Hawaiian Islands National Wildlife Refuge (see map on page 9), where entry is prohibited without a permit. Rather, the Critical Habitat designation reinforces the protection listed species already have under the Endangered Species Act, and notifies Federal agencies that any of their activities that may affect such an area are subject to the interagency consultation requirements of Section 7 of the Act.

Comments on the Critical Habitat proposal should be sent to E. C. Fullerton, Regional Director, Southwest Region, National Marine Fisheries Service, 300 S. Ferry Street, Terminal Island, California 90731 by March 11, 1985.

Special Report: California Condor

Building a Captive Breeding Flock

by Robin B. Goodloe
Endangered Species Research Branch
Patuxent Wildlife Research Center

– second of two parts –

Building a Captive Propagation Flock

California condors have not yet been bred in captivity, although captive Andean condors and other vulture species have reproduced successfully. Only one adult California condor, a 16-year old male, currently is held in captivity. Since late 1982, however, 15 young condors, representing offspring from each of the five pairs now known to exist in the wild, have been added to captive flocks at the Los Angeles Zoo and the San Diego Wild Animal Park. Some of these young condors originally hatched in the wild, including a free-flying male that was trapped in 1982 as a yearling, three birds (one female and two males) taken into captivity as preflight nestlings in 1982 and 1983, and a male chick removed from the nest of the condor pair that was located in 1984. The majority of the captive birds, however, hatched from eggs that were taken from wild nests and then incubated artificially at the San Diego Zoo.

In 1983, four eggs were taken from three wild condor pairs and successfully hatched, producing a male and three female chicks. An additional eight eggs were taken from four pairs in 1984, but two of the chicks that hatched failed to survive. One was severely deformed and lived only a half hour after hatching, while the second died from an apparent bacterial infection of the yolk sac several days after hatching. The six other 1984 eggs, however, hatched as healthy female chicks.

Increases in Production

In 1983, first clutch eggs were taken for artificial incubation from the three known active nests in the wild. Two pairs recycled and laid replacement eggs. One pair lost its second egg, probably to ravens (*Corvus corax*), and

continued on page 6

Photo by Rob R. Ramey II

Research biologist from the Condor Research Center transfers a breeding pair's third egg of the season.

California Condor

continued from page 5

subsequently laid a third egg, the first documented case of *triple*-clutching in California condors. The chick that hatched from this third egg, along with a chick produced by a second condor pair that was discovered in May 1983, were taken into captivity.

The second egg of the third condor pair known to be nesting in 1983 was taken into captivity following an outbreak of incubation disputes between the adult birds similar to those that caused the pair to lose its two eggs the previous year (See BULLETIN Vol. VII No. 5). This pair did not lay a third egg; however, a dummy egg and, later, a wax-filled swan's egg equipped with transmitters and two temperature sensors were fostered into the nest to allow continued study of the pair's behavior and to provide information on incubation temperatures and egg turning frequency. In early June, the telemetered egg was replaced with a 10-day old captive-reared female Andean condor to determine if incubating California condors would accept a fostered chick. The chick, however, was accidentally nudged out of the nest by the adult female and was returned to captivity.

In 1984, similar egg removal procedures were followed. Three of four condor pairs nesting this year recycled following removal of their first eggs. All replacement eggs, including a third egg that was laid in a nest harassed by ravens, were taken into captivity. Both pairs from which pre-flight chicks were taken in 1983 successfully laid eggs again on schedule in 1984.

This selective removal of eggs and pre-flight nestlings has had a significant impact on condor egg production, hatchability, and survival of young. From 1980 to 1982, the 3 condor pairs that were known to breed produced a total of 10 eggs (an average of 3.3 eggs per year). Five of these eggs were destroyed during intrapair fights, by ravens, or by other factors, but the other five hatched successfully (50 percent or an average of 1.67 eggs per year). One nestling died before fledging, a second was taken into captivity after the parents began to feed the chick sporadically, and 3 chicks fledged, in successive years, into the wild (for an average of 1.33 fledglings per year).

In contrast, the same 3 pairs produced 13 eggs from 1983 to 1984, when egg and chick removal was employed. Twelve hatched (92.3 percent or an average of 6 per year), and 11 chicks fledged (91.7 percent or an average of 5.5 per year). This represents a *four-fold* increase in fledgling production by the three pairs, an increase that is directly related to FWS/NAS activities to encourage multiple clutching and annual breeding.

Plans for the Future

The research and recovery program for the California condor is scheduled to continue well into the next century, with emphasis on identification and protection of condor habitat, increased production of eggs and chicks by wild pairs, further identification of mortality factors, and propagation and release of captive birds. Specific goals for the period from 1984 to 1987 include radio tagging 15 free-flying condors and 3 preflight nestlings; removal of first and second-clutch eggs to stimulate multiple clutching; maintenance of a captive flock with up to 5 individuals from each active breeding pair (subject to approval by the State); and release of captive-reared birds equipped with radio transmitters. The first release of up to three birds is tentatively scheduled for spring 1985, depending on the success of the upcoming 1985 breeding season

Research efforts during the past four years have been extremely productive. With continued success, it is hoped that California condors will again someday inhabit their former range in significant numbers.

* * *

The 1984 tally for the California condor:

- 15 free-flying birds known in the wild, including 5 known pairs.
- 16 birds in captivity, including one adult male (Topatopa) and 15 immature birds and young-of-the-year (10 females, 5 males).

Photo courtesy Zoological Society of San Diego

Piru, the first California condor to hatch at the San Diego Zoo in 1984, gets an assist from birdkeeper Cyndi Kuehler.

Creating Wood Stork Habitat: An Important Management Strategy

By
Warren Parker
Endangered Species Field Supervisor
Asheville, North Carolina

The wood stork *(Mycteria americana)*, a large white bird that was listed as Endangered on February 28, 1984 (see BULLETIN Vol. IX No. 3), has been experiencing a major population decline for more than 50 years. From an estimated southeastern U.S. nesting population of 75,000 to 100,000 pairs in the early 1900s, levels fell to 10,000 pairs in 1960, 6,000 pairs in 1975, and 4,800 pairs in 1980. If this rate of decline continues, the species could become extinct by the turn of the century.

Widespread habitat damage, particularly that caused by artificial manipulations of natural water regimes in south Florida, and the effects of periodic droughts contributed heavily to recent declines. Since wood storks feed in shallow water (typically 6 to 20 inches deep), changes in water levels result in a lack of food resources and major declines in reproduction. It is surmised that these adverse conditions have forced some colonies to move northward seeking more favorable hydrological conditions.

The Birdsville wood stork colony was discovered in 1980. It is located near the Service's Millen National Fish Hatchery in Jenkins County, Georgia. About 100 breeding pairs comprise the rookery, and these birds forage out from the nesting site toward the U.S. Department of Energy's (DOE) 200,000-acre Savannah River Plant, about 30 miles away. The planned restart of a "mothballed" atomic reactor at the plant has created an environmental controversy.

It was found that the Birdsville wood storks were foraging for fish in ponds within the Savannah River Plant, particularly in the lower reach of Steel Creek on a delta that was created by an earlier reactor operation where the creek enters the Savannah River. The reactor in question is one of three on the Savannah River Plant that produces "defense nuclear materials" (primarily plutonium and tritium) for use in nuclear weapons. If this reactivated reactor (the "L Reactor") is restarted, Steel Creek delta will be inundated by cooling water discharge, which will prevent use of the creek by feeding wood storks.

The seeming impasse brought together personnel from the DOE (which runs the reactors), the Du Pont Corporation (primary contractor), and the Fish and Wildlife Service. Out of the resulting discussions emerged the concept of attempting to create "new" foraging habitat. If a suitable site near the plant could be located, developed, and managed as foraging habitat, then the problem could potentially be mitigated. Fortunately, an abandoned 32-acre waterfowl management pond on adjacent property was located and found to be owned by the National Audubon Society (NAS). The pond is currently in poor condition with a broken earthern embankment, but the NAS has expressed a willingness to work with the principals in this issue.

Continued negotiations are leading to a soon-to-be-completed agreement between the DOE and the NAS for the use of refurbishment of the 32-acre pond. DOE also has given the Service formal commitments for funding construction of subimpoundments within the pond, stocking of forage fish, and annual management and maintenance of the ponds—all oriented to the foraging needs of wood storks from the Birdsville colony. The facility will be in place and operating in mid-March 1985. Technical assistance on fish production is being provided by Auburn University. Dr. John C. Ogden, a nationally recognized authority on wood storks, will provide overall management strategy.

As a result of these comments by the DOE, the Service was able to provide DOE a biological opinion that the restart of the L-Reactor is not likely to jeopardize the wood stork's survival. If the habitat plan is proven successful, an important management tool will become available.

Given the right circumstances and incentives, development of managed wood stork foraging ponds might prove important to the survival of this rapidly declining species.

Photo by Don Pfitzer

Widespread habitat damage and the effects of periodic droughts have contributed to the decline of the wood stork.

Recovery News

Plan Approved for Three Songbirds of the Northwestern Hawaiian Islands

The Northwestern Hawaiian Islands are well known for the rich assemblages of seabirds that use them for nesting. Less well known are the seven primarily terrestrial birds endemic to the islands. Three of them, unfortunately, became extinct early in this century. One of the four that survive, the Laysan duck *(Anas laysanensis)*, was the subject of a December 17, 1982, recovery plan (see BULLETIN Vol. VIII No. 2). The other three are songbirds (order Passeriformes), and are included in the *Northwestern Hawaiian Islands Passerines Recovery Plan*, approved October 4, 1984:

* * *

Laysan finch *(Telespyza [= Psittirostra] cantans)*—Adult males of this species are characterized by a conspicuous, bright yellow head, throat, and breast, with dark green to black streaking on the upper back, blending to gray on the lower back. Females are brownish, streaked all over with more black above and a faint wash of greenish-yellow, particularly on the breast. Laysan finches also have a distinctive, heavy conical bill colored bluish to grey. Adults reach overall lengths of up to about 6.5 inches. They have a song described by Andrew J. Berger as "loud, melodious, and canarylike, even to the inclusion of trills." Being very bold birds, they are easily captured and were considered good "cage birds" by early explorers of the islands.

Their natural range is restricted to Laysan Island, a 1,005-acre coral sand atoll near the middle of the northwestern archipelago. Laysan finches are found in all of the island's native plant associations, although they apparently prefer the bunchgrass *(Eragrostis variabilis)* association. Thick bunches of this grass grow up to about 3 feet in height, providing cover, nesting sites, and some food. The finches feed on a wide variety of plant and animal material, including seeds, tender plant shoots and flower buds, and eggs of the more common seabirds that share the island.

Laysan's fragile ecosystem was severely damaged early in this century after introduced rabbits multiplied and consumed virtually all of the island's vegetation, turning it into a wasteland. Three of the island's endemic terrestrial birds, the Laysan millerbird *(Acrocephalus familiaris familiaris)*, Laysan honeycreeper *(Himatione sanguinea freethi)*, and Laysan rail *(Porzana palmeri)*, became extinct as a direct result. The Laysan finch, which was historically abundant on the island, declined sharply, but an estimated 100 still survived when the rabbits were eradicated in 1923.

As the island's vegetation recovered, Laysan finch numbers rose. Current estimates are that there is a relatively stable population of about 10,000 finches on Laysan. A 1967 introduction of the Laysan finch to Southeast Island in the Pearl and Hermes Reef group has resulted in an apparently self-sustaining second population of about 500 to 700 birds. Most of them are on Southwest Island, but some have dispersed over several small nearby islands. (An earlier population established at Midway's East Island was wiped out by accidentally introduced rats.) This species has been listed as Endangered since 1967.

* * *

Nihoa Island is a 156-acre remnant of a volcanic cone with rough topography, many rocky outcroppings, several small valleys, and high cliffs along most of the island's edges. Two birds endemic to Nihoa also are subjects of the recovery plan:

Nihoa finch *(Telespyza [= Psittirostra] ultima)*—This bird resembles the closely related Laysan finch, particularly in its plumage, bold nature, and omnivorous diet, but is slightly smaller (about 5.5 inches in length). It is fairly widespread over Nihoa Island. Small holes in cliffs or rock outcroppings apparently are the preferred nesting sites.

continued on next page

Photo by Robert J. Shallenberger

Laysan finch

Research on census techniques in 1980 by Dr. Sheila Conant, M. S. Collins, and Dr. C. J. Ralph yielded a population estimate of about 1,608 Nihoa finches (using the fixed distance strip technique, the method used most often in the past). This species occurs nowhere else; attempts in 1967 by the Fish and Wildlife Service to establish a population on Tern Island (French Frigate Shoals) met with failure. The species was listed that same year as Endangered, due primarily to the vulnerability of the small population and its fragile habitat.

Nihoa millerbird *(Acrocephalus familiaris kingi)*—This bird, also endemic to Nihoa Island, can be distinguished by its plumage, dark gray-brown above and buffy-white below. The millerbird is relatively secretive, rarely leaving the dense, low cover vegetation *(Sida* and *Chenopodium)* where it nests. Its diet consists of insects, terrestrial arthropods gleaned primarily from the shrubs.

The same team that censused the Nihoa finch came up with an estimate of about 338 millerbirds. Dr. Conant located approximately 100 acres of shrubby habitat in Nihoa's valleys, and the island's carrying capacity for the millerbirds appears to be a maximum of 600 birds. The amount of suitable habitat, however, may fluctuate over a period of time. Because of the island's low annual rainfall, one continuing threat is fire. The Nihoa millerbird was listed as Endangered in 1967, and no attempts have been made to establish populations on other islands.

* * *

Due to the extremely limited distribution and sensitive habitat of the three birds, the negative impacts of any disruptions are likely to have serious impacts. The status of Laysan and Nihoa Islands as part of a Federal wildlife refuge and as designated Research Natural Areas does provide legal protection, but trespass regulations are difficult to enforce in this remote region.

Any future intentional introductions of exotic animals or plants under current management guidelines are extremely unlikely, given the tragic example of the rabbits at Laysan earlier in this century. There is considerable concern, though, about *accidental* introductions. Rats, for example, have already caused severe problems for the avifauna of the main Hawaiian Islands by preying on chicks and eggs, and have demonstrated a remarkable ability to spread to the world's most remote unoccupied areas. If any were to escape onto Laysan or Nihoa from a shipwreck or from vessels illegally landing on the islands, they could become established and spell disaster for the passerines, seabirds, and native vegetation.

Exotic birds, such as common mynas *(Acridotheres tristis)* or Japanese bush-warblers *(Cettia diphone),* are also established on the main Hawaiian Islands. Although they are unlikely to reach the northwestern chain, the potential cannot be ignored. Mynas are known predators of nestlings and would compete with the finches and millerbird for food. Either exotic bird also could bring avian diseases to Laysan and Nihoa, with devastating results for the endemic avifauna.

The accidental establishment of certain other exotic animals and plants, more difficult to prevent, might have no less an impact. Predatory insects, such as carnivorous ants, could disrupt the food supply of the endemic passerines (particularly the insectivorous Nihoa millerbird) and even prey directly on hatchlings. Another possibility is that exotic plants may out-compete the native species that provide food and nesting sites.

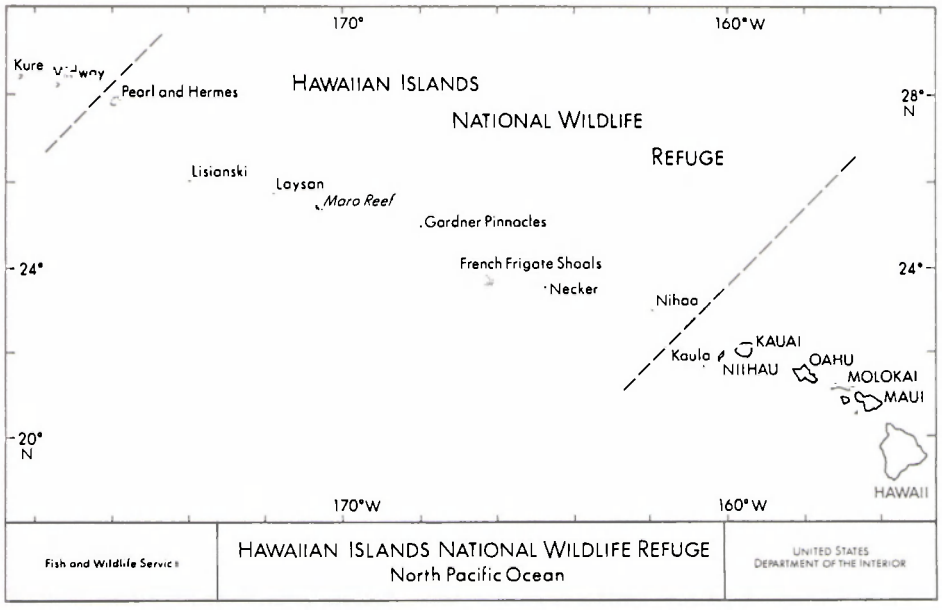


Photo by Robert J. Shallenberger

Nihoa finch

Past Conservation Measures

In 1909, President Theodore Roosevelt issued an Executive Order establishing the Hawaiian Islands Reservation, protection that applied to the entire northwestern chain except for the Midway Islands. (Later, control of Kure Atoll was turned over to the Territory of Hawaii.) In 1940, the reservation was designated as the Hawaiian Islands National Wildlife Refuge. Under management by the U.S. Fish and Wildlife Service, landing on the refuge islands and entry into refuge waters are authorized only by Service permit. No activities are permitted within the refuge unless they are compatible with the purposes for which the refuge was established.

The three passerine birds covered in this recovery plan also receive the full protection of the Endangered Species Act. Studies on these species have

continued on page 10

Plan Approved for Three Songbirds

continued from page 9

been conducted by Service biologists and independent researchers (operating under Service permits) for many years. More recent efforts have been directed toward developing an inventory of the resources of these islands. Meanwhile, it is likely that periodic monitoring of the Endangered bird populations and their habitats will continue.

Recovery Actions

The recovery program for the three songbirds of the Northwestern Hawaiian Islands is somewhat different from those covering most other species. Although these birds are indeed in danger of extinction, it is not because their current populations are significantly lower than historical levels. They have always occurred in relatively low numbers and have always been restricted to extremely limited natural habitats. It is their inherent vulnerability that makes the birds Endangered. Therefore, the foundation for the recovery program will be protection of the delicate ecosystems that support the birds.

In the *Northwestern Hawaiian Islands Passerines Recovery Plan,* three main conservation strategies are emphasized. First, all feasible steps should be taken to prevent any introductions of exotic animals or plants; second, a monitoring program should be set up to detect changes in the distribution and abundance of exotics; and third, specific plans for dealing with invasions of exotics, changes in habitat, and declines in bird populations should be developed. Once these tasks are accomplished, consideration can be given to reclassifying the three birds from Endangered to Threatened. However, because it is not possible to completely remove all potential threats to the birds and their habitat, it is likely that they will always remain in need of special protection.

Maintaining the Fish and Wildlife Service's strict controls on human entry into, or use of, the Hawaiian Islands National Wildlife Refuge is critical to the success of the recovery effort. The plan calls for taking every opportunity to impress upon those most likely to come into contact with the refuge islands—operators of fishing boats, freighters, sailboats, etc.—the fragility of the resource and the existence of protective regulations. Agencies such as the U.S. Coast Guard, the National Marine Fisheries Service (NMFS), and the Hawaii State Division of Aquatic Resources will be encouraged to note the restricted areas on the maps, charts, and notices they provide. The remoteness of the islands creates logistical difficulties in enforcing the regulations; therefore all opportunities for periodic patrols should be used. For example, the Coast Guard and NMFS will be requested to assist, when possible, during their operations in the area. (NMFS conducts surveillance of foreign fishing activities in the area and carries out research on the Endangered Hawaiian monk seal, and the Coast Guard flies supplies to its navigation station on Kure Atoll.)

Although the regulations governing access to the refuge should minimize the chances that thoughtless persons might introduce exotic animals or plants, whether by accident or intent, there will always be a degree of risk. A "safety check," perhaps consisting of a list of steps such as vessel inspection, should be developed for use by all authorized management and research personnel landing on the islands. (An important part of the recovery plan is a recommendation for researchers to census the bird populations at least annually.) Not only are there the obvious dangers of introducing rats to the islands; the entry of smaller organisms, such as mosquitos, other insects, or plant seeds, may be as harmful and at least equally difficult to prevent.

In case, despite all precautions, harmful exotic organisms do become established, the Service needs to develop techniques for detecting and dealing with a potential disaster. Since prompt action will be necessary, a contingency plan should be established prior to an outbreak. There are, for example, a variety of techniques for control of rodents and other exotics, and all should be explored. Experimentation could take place at Midway, where some of the harmful species have already become established.

Some exotic plants, and perhaps even some small invertebrates, are already established on Laysan and Nihoa Islands. At present, they do not appear to pose problems for the millerbird or finches, but there may be more subtle long-term impacts. Decisions will eventually have to be made on whether or not it is necessary to initiate eradication or control efforts.

Plans also should be developed to deal with the possibility that widely-ranging seabirds, or perhaps a vagrant exotic, occasionally carry avian diseases to the northwestern islands. In the event that disease is detected in the native passerines, it would become necessary to isolate at least some of any remaining healthy birds in a safe environment until the problem is resolved.

As is the case with efforts for all species, the key to maintaining stable populations of the three passerines is to conserve the ecosystems upon which they depend. Unfortunately, because of their limited numbers and range, there will probably always be a possibility that these birds could quickly become extinct. One safeguard against extinction might be to establish and maintain captive breeding flocks. There are several obvious drawbacks to such an approach, including the expense and possible genetic drift in captive populations. If it is attempted, however, priority will probably be given to the Nihoa finch since there are already two populations of the Laysan finch and since the Nihoa millerbird is considered delicate and difficult to handle in captivity.

An alternative, at least for the Nihoa millerbird, might be to establish a second population of this bird on Laysan Island, where it presumably could fill the niche left open by the now extinct Laysan millerbird. Because the two subspecies were always considered very similar, a taxonomic review could be undertaken to determine if they were in fact the same bird. If it is found that they were two distinct subspecies, a decision would have to be made on whether or not to introduce the Nihoa millerbird onto Laysan Island anyway. Current policy does not allow the Service to translocate a taxon outside its historical range without the Director's approval, which would be given only for particularly compelling justification.

Photo by Robert J. Shallenberger

Nihoa millerbird

Regional Briefs

continued from page 2

Region 3—On January 15, representatives from the FWS, the U.S. Army Corps of Engineers, and several States met in St. Louis, Missouri, to discuss future survey techniques for the interior least tern *(Sterna antillarum athalassos)*. This species, proposed for listing on May 29, 1984 (see BULLETIN Vol. IX No. 6), nests on sandbars in the Missouri and Mississippi Rivers and their tributaries. The least tern population has declined because of vegetative encroachment, stream channelization, and reservoir construction.

* * *

Bald Eagle Appreciation Days were held in Keokuk, Iowa, on January 19 d20 with the States of Illinois, Iowa, and Missouri as joint hosts. This annual event provides the opportunity for several hundred people to view our Nation's symbol in its winter habitat. Despite subzero temperatures, attendance was high, making this year's event a big success.

* * *

Region 4—A December 1984 tour of the known populations of the Florida golden aster *(Chrysopsis floridana)*, a Category 1 listing candidate, confirmed that this husky perennial requires a habitat of bare, dry sand. Its historical distribution included what is now St. Petersburg Beach, but its largest current populations are on vacant lots in a subdivision where partial bulldozing of sand pine scrub created sizable patches of sand that the golden aster readily colonized. Mature plants were found producing abundant flowers and seeds. This species, like some other Florida plants, has substantially lost the natural ecosystems upon which it depended.

In other Region 4 plant news, an effort by the Florida Native Plant Society to propagate the Category 1 candidate four-petal pawpaw *(Asimina tetramera)* has been successful. One hundred 2-year-old potted seedlings of the pawpaw are reaching flowering size (about 18 inches tall), and six have already been transplanted to suitable habitat in a county park. The plant's range is along the Atlantic coast from Palm Beach to Hobe Sound, an area that has become urbanized in the past decade. Like the Florida golden aster, this species inhabits sand pine scrub and only about 300 plants remain in the wild. Cultivated seedlings may be useful both as a source of ornamental shrubs and for restocking where the pawpaws have died out.

* * *

The silver rice rat *(Oryzomys argentatus)*, a species that occurs on some of the lower Florida Keys, was discovered in 1973 and described just recently in 1978, yet concerns already have arisen about its survival. In 1980, the Service was petitioned by a conservation group to list it as Endangered because, at that time, it was known only from a handful of specimens, and it was feared that the rapid residential and commercial development of the lower Keys would eliminate the species entirely within a short period of time. This small mammal depends on relatively remote, undeveloped wetlands with dense vegetation. However, so little was known about the biology, distribution, status, and precise threats to this newly discovered animal that the Service decided to fund a field survey before acting on the petition. The survey has now been completed, and the results have been submitted to the FWS Jacksonville Field Station for review and analysis.

* * *

A formal Section 7 consultation with personnel representing the U.S. Marine Corps at Camp Lejeune, North Carolina, revealed the need for close coordination and field inspection while a 27-mile reach of railroad owned by the Marine Corps between Camp Lejeune and Cherry Point is being upgraded. The antiquated rail system must be refurbished to allow heavy armor and other equipment of the 2nd Marine Division to be rapidly transported to the port facility at Morehead City, North Carolina.

The track crosses a zone of approximately 7 miles within the Croatan National Forest, which is inhabited by a high population of Endangered American alligators *(Alligator mississippiensis)*. These animals, some up to 10 feet in length, are commonly seen sunning along the tracks. The construction activities include the redigging of old borrow ditches and the clearing of timber within the right-of-way. During the consultations, FWS stressed the need to avoid adversely impacting the alligators during their nesting season and at periods during the winter months when they become dormant.

A solution was reached that will defer construction activities during these two critical periods. The Marines agreed to allow contractors to work in the sensitive 7-mile reach of railroad only during the periods of October 1–December 15 and March 15–June 15. As a result of these commitments, the FWS was able to issue a "not likely to jeopardize" biological opinion to the base commander.

* * *

Region 5—The State of Delaware has entered into an Endangered Species Program cooperative agreement with the FWS (effective January 31, 1985) for the conservation of plants. Grant funds authorized under Section 6 of the Endangered Species Act have been set aside this fiscal year to assist Delaware in its research and conservation efforts for several candidate plant species.

* * *

Dunng the annual bald eagle winter survey in Massachusetts, five marked birds were observed at Quabbin Reservoir, the bald eagle hacking site in that State since 1982. The eagles were identified as one bird released in New York in 1983; one that hatched in Michigan and then was released in Massachusetts in 1982; another from Manitoba that was released in Massachusetts in 1983; and two from Nova Scotia that were released in Massachusetts in 1984.

* * *

On January 9, a meeting of the Chesapeake Bay Bald Eagle Recovery Team and representatives of participating States was held at the Patuxent Wildlife Research Center. Discussions centered around revisions of recovery plans and 1984 progress toward planned goals for the species. In 1984, there were 124 occupied bald eagle breeding territories in the Chesapeake Bay region. From 123 nests known to produce young, 130 young fledged, which indicates an average productivity rate of 1.06 young per occupied nest. Of the young produced, 109 (84 percent) were banded by members of the Chesapeake Bay bald eagle banding team.

* * *

Region 6—The Peregrine Fund reports continued success in peregrine falcon *(Falco peregrinus)* recovery activities in the Rocky Mountains. For the first time in many years, peregrine falcons are nesting and producing young in Montana and Wyoming. In June 1984, biologists discovered Montana's only known active eyrie, which contained two healthy, week-old peregrines. The eyrie is located near the State's first hack site, established in 1981. The adults at this site were captive-produced and wore FWS and Peregrine Fund bands. Also in June, Wyoming biologists conducting a routine check of a historical eyrie in Yellowstone National Park observed that the eyrie was occupied and contained three young birds. This was the first time in over 10 years that the site had been occupied by peregrines.

Peregrines in Utah again raised young at one hack tower and others defended a second tower. Although no peregrines

continued on page 12

Regional Briefs

continued from page 11

have been released in Salt Lake City, three peregrines have appeared there and a pair stayed all summer, courting and making nest scrapes on ledges of the Hotel Utah and other large buildings. No eggs were produced by this pair, however, since the female was only a year old.

* * *

In the Regional Briefs section of BULLETIN Vol. IX No. 12, the contact person for information on grizzly bears was given as Dave Flemming of the FWS Region 6 staff. Please note that the correct contact person is Mr. Chris Servheen, U.S. Fish and Wildlife Service, HS 105D, University of Montana, Missoula, Montana 59812; telephone FTS 585-3223 or commercial 406/329-3223.

* * *

Recovery Plan Update

During January 1985, three recovery plans were approved: the *Small Whorled Pogonia Recovery Plan* (1/16/85); the *Pink Mucket Pearly Mussel Recovery Plan* (1/24/85); and the *Tubercled-, Turgid-, and Yellow-blossom Pearly Mussels Recovery Plan* (1/25/85).

Copies of recovery plans become available for purchase about 6 months from their date of approval. Requests should be made to the Fish and Wildlife Reference Service, 1776 E. Jefferson Street, Suite 470S, Rockville, Maryland 20852; telephone 800/582-3421.

BOX SCORE OF LISTINGS/RECOVERY PLANS

Category	ENDANGERED U.S. Only	ENDANGERED U.S. & Foreign	ENDANGERED Foreign Only	THREATENED U.S. Only	THREATENED U.S. & Foreign	THREATENED Foreign Only	SPECIES* TOTAL	SPECIES HAVING PLANS
Mammals	20	19	234	4	0	22	299	21
Birds	59	13	144	3	1	0	220	52
Reptiles	8	6	60	8	4	13	99	16
Amphibians	5	0	8	3	0	0	16	6
Fishes	29	4	11	14	3	0	62	36
Snails	3	0	1	5	0	0	9	7
Clams	22	0	2	0	0	0	24	18
Crustaceans	3	0	0	1	0	0	4	1
Insects	8	0	0	4	0	0	12	9
Plants	67	5	1	9	2	2	86	34
TOTAL	225	47	461	51	10	37	831	200**

*Separate populations of a species, listed both as Endangered and Threatened, are tallied twice. Species which are thus accounted for are the gray wolf, bald eagle, American alligator, green sea turtle, Olive ridley sea turtle, and leopard.

**More than one species may be covered by some plans, and a few species have more than one plan covering different parts of their ranges.

Number of Recovery Plans approved: 167
Number of species currently proposed for listing: 31 animals
37 plants

Number of Species with Critical Habitats determined: 68
Number of Cooperative Agreements signed with States: 41 fish & wildlife
16 plants

January 31, 1985

Utah Plant

continued from page 3

Possible effects of a listing on BLM and NPS activities are expected to be limited. Both agencies funded some of the field surveys on Jones cycladenia, and they are aware of the population sites for planning purposes. Special care in administering mining claims and oil/gas leases will be needed. Restricting access to certain roads also could be found necessary.

The Act makes it illegal to engage in interstate or international trafficking in Endangered plants or to "remove and reduce to possession" Endangered plants from lands under Federal jurisdiction. Permits for those prohibited activities are available only for approved scientific or conservation purposes. Other benefits of listing include the requirement for the Service to develop a recovery plan and the possibility of Federal funding to Utah if it obtains a cooperative agreement for the conservation of listed plant species through Section 6 of the Act.

FEBRUARY 1985 VOL. X No. 2

ENDANGERED SPECIES

Technical Bulletin

Department of interior. U.S. Fish and Wildlife Service
Endangered Species Program, Washington, D.C. 20240

FIRST CLASS
POSTAGE AND FEES PAID
U.S. DEPARTMENT OF THE INTERIOR
PERMIT NO G-77